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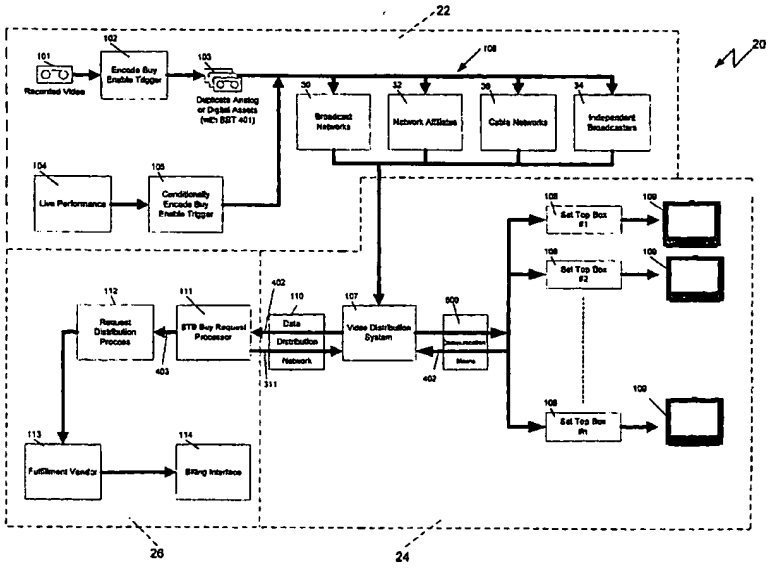
(54) Title: SYSTEM AND METHOD FOR ENABLING TELEVISION COMMERCE SIMULTANEOUSLY FOR MULTIPLE CHANNELS FOR MULTIPLE MERCHANTS



(57) Abstract: A system and method for providing television programming which has been enabled for interactive purchase by viewers using their set top boxes over multiple channels for multiple merchant products/services and for delivering those purchase requests to the parties who provide fulfillment and billing for those requests.

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For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

SYSTEM & METHOD FOR ENABLING TELEVISION COMMERCE SIMULTANEOUSLY FOR MULTIPLE CHANNELS FOR MULTIPLE MERCHANTS

SPECIFICATION

FIELD OF THE INVENTION

The invention pertains to the field of interactive television commerce, and more particularly, to a system and method for enabling television commerce simultaneously for multiple channels for multiple merchants.

BACKGROUND OF INVENTION

Providing television viewers with the ability to purchase television-advertised items/services from the convenience of their homes is well-known. Such systems and methods have included sending the viewer a printed catalog from which the viewer can obtain additional information about the item/service, as well as the proper ordering information; the viewer can then either mail in the request or place the order by telephone. As technology advances, so too has the desire to accelerate, while simplifying, the process of ordering these television-advertised items/services.

The following U.S. patents are related to this field:

U.S. Patent No. 5,999,624 (Hopkins) discloses a device which is an "in-home" substitute for a credit card swipe mechanism. By having the viewer enter credit card numbers and related information into the device, the need to "swipe" a card to make a purchase is eliminated. At purchase time, the remote control is used to instigate a purchase. That action results in the device sending "name, address, credit card number, and amount" to a bank or financial institution over a network. Although Hopkins suggests that the message could be sent via a cable television network, he presents no mechanism to do so. See also U.S. Patent No. 5,973,756 (Erlin) which discloses a device which incorporates a credit card swipe mechanism into the television remote control wherein, at purchase time, the remote control is used to instigate a purchase by sending "name, address, credit card number, and amount" to a bank or financial institution.

U.S. Patent No. 5,960,411 (Hartman et al.) is an Internet-based ordering system. Although reference is made to "television based systems", that reference is

in the context of the television being used as a potential display device for accessing content via an Internet network, not cable television-delivered content.

U.S. Patent No. 5,905,521 (Gatto) describes a collection of equipment and suggests that this collection may be used to play video games, participate in online polls, make online purchases, conduct real-time language translation for broadcasts, conduct teleconferencing, and control an individual's personal computer, printer and scanner. Gatto suggests that the equipment may accept voice commands, keyboard commands, and commands from the TV remote. Gatto also suggests that this equipment may be connected to data servers across a network which may include satellite, radio, television broadcast, cable, or infrasound using communication protocols which may include ATM, FDDI, Ethernet, TCPIP, and CCITT. Furthermore, Gatto describes items for sale being chosen from a CD-ROM, not a live video stream.

U.S. Patent No. 5,469,206 (Strubbe et al.) discloses a system whereby text, video, and images of ECI (electronic catalog information), concerning product offers, are presented to the viewer and the viewer uses the remote control to select and "purchase" from the ECI. It appears that the system is a "store and forward"architecture whereby content is stored in a database and viewing is separated in time from the loading of the database. Essentially, the viewer controls the sequence of the offers (programming) though his/her selections from the ECI. Unlike the present invention, there is no presentation of product offers that stream to the television as they are delivered to the set in the video signal, nor is the programming controlled by the content producer or the distributor, and nor does the viewer perform the "buy" interaction within the real time video stream.

U.S. Patent No. 5,898,919 (Yuen)discloses a system wherein data that is required for the purchase of an item is embedded in the vertical blanking interval (VBI) line 21 (e.g., close captioning, extended data services), although it is unclear how such data is translated in the VBI into a prompt for the viewer. The system requires a cordless telephone to complete the purchase order and also requires a specially-configured set top box having a cordless telephone transmitter in order to place the order. The system also requires that credit card, or other payment data, be stored on the television and transmitted through public space for each order. In operation, the Yuen system presents an offer, the viewer responds to the offer, and payment data is

collected from the television. The cordless phone transmitter in the specially-configured set top box sends purchase data to the telephone base unit which then dials the central office for transmission of order. However, it is unclear what the central office does with the order.

U.S. Patent No. 5,872,589 (Morales) describes a mechanism for communicating from a television set top box to a central "repeater" station via wireless communications. Morales also suggests using a bar code scan device to order products advertised through magazines; using the bar code mechanism, orders for magazine items could be delivered to the advertiser via the wireless "back" channel. See also U.S. Patent No. 5,812,931 (Yuen) which incorporates an RF pager into the set top box to provide a return channel to a network operations center (NOC). The information is then forwarded to the information provider (i.e. advertiser, cable operator, etc.). The pager would also be used to deliver acknowledgments from the information provider back to the viewer.

U.S. Patent No. 5,663,757 (Morales) describes a software architecture which runs on an "answering device," which provides coordination of multiple applications and back channel communications via a wireless network. The software works in tandem with the television signal. Home shopping, games, polling, and audience analysis are all mentioned as possible applications that could be run under this architecture. It defines a wireless communications environment for its back channel.

U.S. Patent No. 5,481,542 (Logston et al.) discloses a mechanism for providing a digital cable head end which supports interactive applications.

U.S. Patent No. 5,451,998 (Hamrick) describes a video cassette-based catalog of products which can be reviewed and ordered by playing the video cassette. Product identification codes are displayed in the video along with the product. An order form is completed by the viewer and delivered to the merchant.

U.S. Patent No. 5,325,423 (Lewis) describes a system for combining video content delivered via typical distribution means with interactive multimedia information delivered via a telephone line. A video mastering device is used to combine the two signals into a consolidated signal.

U.S. Patent No. 5,093,718 (Hoarty et al.) describes a system which delivers video content and interactivity in broad scale by providing duplicate content

repositories throughout the network. This limits bandwidth requirements in the network and speeds response time for individual requests.

U.S. Patent No. 5,046,093 (Wachob) describes a device which is an intelligent remote control. In order to have a low cost, set top box which can support both basic and advanced functions, intelligence is moved to the remote control.

U.S. Patent No. 5,077,607 (Johnson et al.) describes a "computer terminal" attached to a hotel cable television network. Applications are described in the areas of pay movies, room service, check out, etc. The applications run on a dedicated "channel."

U.S. Patent No. 5,592,212 (Handelman) teaches a system for providing gaming and merchandise shopping over cable television. Specific architecture is based on offering a catalog on a dedicated 'shopping' channel that the viewer reviews and selects items from.

U.S. Patent No. 5,539,450 (Handelman) teaches a system for providing gaming and merchandise shopping over cable television. Specific architecture is based on offering a catalog on a dedicated shopping channel that the viewer reviews and selects items from.

U.S. Patent No. 6,002,394 (Schien et al.) teaches a system for bringing advertisers and viewers together by relating program content to likely viewer profiles via linkage in the program guide.

U.S. Patent No. 5,897,623 (Fein et al.) teaches a system for delivering information about a specific product to a viewer watching TV by having the viewer select the item from a list.

However, none of the above references teach or suggest the enabling of the incoming programming content itself for the immediate consideration by the viewer on a variety of television channels regarding a variety of items/services, and then permitting the viewer to send a purchase request back through the viewer's television's set top box. Thus, there remains a need for a system and method that can enable television commerce simultaneously for multiple channels for multiple merchants and while maintaining the television viewing paradigm for viewers.

OBJECTS OF THE INVENTION

Accordingly, it is the general object of this invention to provide an invention that overcomes the disadvantages of the prior art.

It is an object of the present invention to provide viewers with the ability to interactively purchase items/services through their televisions while maintaining the television viewing paradigm and without converting their televisions into a "computer screen."

It is an object of the present invention to provide programming content providers with the ability to control the programming content that is "buy-enabled" for viewers' consideration and reaction.

It is another object of the present invention to provide a system and method whereby multiple product and service vendors' advertisements over multiple channels can be handled by a single entity.

It is another object of the present invention to provide viewers with the ability to interactively purchase items/services through a cable television network or through a satellite system.

It is an object of the present invention to provide a system and method that utilizes the cable network to send purchase requests, thereby eliminating the need and complexity of telephone lines, wireless connections, etc.

It is another object of the present invention to provide a system and method that makes the set top box identification both consistent and anonymous, thereby protecting the privacy of the viewer is protected.

It is another object of the present invention to provide a system and method whereby the risk that an advertiser/merchant may be able to use a piece of data received in support of a buy request to trace back to a viewer's other activities with his/her cable operator is eliminated.

It is an object of the present invention to provide a system and method for providing advertisers and/or merchants with complete control in enabling their advertisements or programming for purchase requests by viewers.

It is still yet a further object of the present invention to provide a system and method that eliminates the need for coordinating and enabling purchase activities at the various cable head ends.

It is still yet another object of the present invention to provide a system and method that allows the fulfillment vendor to avoid the process of matching the purchaser's street address against all other prior purchasers to determine if this is a new customer.

It is yet another object of the present invention to provide a system and method that allows for improved efficiencies in identification of new customers, tracking of repeat customer activity, and billing for the purchase.

It is yet even a further object of the present invention to provide a system and method that eliminates the need for coordinating of activities around schedules for buy enabled programming on the part of the cable system operator.

It is still yet another object of the present invention to provide a system and method that eliminates the need for training, monitoring, and maintenance for additional equipment in the head end facility because no new equipment is required in the facility.

SUMMARY OF THE INVENTION

These and other objects of the instant invention are achieved by providing a system for providing interactive purchasing for at least one viewer over a cable television network. The system comprises: a first subsystem that prepares television programming to be buy-enabled and which then transmits the buy-enabled television programming over cable distribution channels; a second subsystem for receiving the buy-enabled television programming from the cable distribution channels and presenting it to the at least one viewer and wherein the second subsystem automatically generates a purchase request, initiated by the at least one viewer, of at least one item contained in the presented buy-enabled television programming; and a third subsystem for receiving the purchase request from the second subsystem and automatically routing the purchase request to an item fulfillment organization for delivering the at least one item to the at least one viewer.

These and other objects of the instant invention are also achieved by providing a method for providing interactive purchasing for at least one viewer over a cable television network. The method comprises the steps of: (a) providing television programming that has been buy-enabled over cable distribution networks; (b) providing a set top box to the at least one viewer that can receive television programming from

the cable distribution networks and which can detect the buy-enabled television programming; (c) presenting said buy-enabled television programming to at least one viewer on a television set associated with said set top box; (d) the set top box automatically generating an at least one item purchase request, initiated by the at least one viewer, that is transmitted over a data distribution network to a fulfillment organization; and (e) delivering the at least one item to the at least one viewer in response to the at least one item purchase request.

DESCRIPTION OF THE DRAWINGS

Other objects and many of the attendant advantages of this invention will be readily appreciated as the same becomes better understood by reference to the following detailed description when considered in connection with the accompanying drawings wherein:

Fig. 1 is an operational block diagram of the present a system for enabling television commerce simultaneously for multiple channels for multiple merchants;

Fig. 2 is an operational block diagram of a cable set top box of the present invention;

Fig. 3 is a plan view of a set top box remote control showing spare buttons that can serve as a "buy button";

Fig. 4 is an exemplary flowchart of the set top box operation during a viewer interaction;

Fig. 5 is a flowchart of the buy button processor; and

Fig. 6 are message definitions used in the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

It should be understood that the term "cable" as used throughout this Specification is used in its broadest sense. Thus, the term "cable" is not limited to hard-wired components but includes video distribution networks, cable television, networks, satellite, terrestrial telephone lines, wireless technology, etc. Moreover, the term "cable" includes a global video distribution mechanism. In addition, the term "wireless" as used throughout this Specification is also used in its broadest sense and includes mechanisms such as satellite, cellular, microwave, infrared, etc.

Referring now in detail to the various figures of the drawing wherein like reference characters refer to like parts, there is shown at 20 in Fig. 1, a system and

method for interactive purchasing over a cable television network, hereinafter "system 20." The system 20 comprises three major subsystems, each of which is comprises several components. These three subsystems are the preparation subsystem 22, the viewer interaction subsystem 24, and processing/distribution subsystem 26. By implementing the system 20 in this manner, as is discussed in detail below, the television viewing experience of the viewer is unaltered, i.e., the viewer's television screen is not converted into a "computer screen" that diverts or interrupts the viewer from continuing to watch the programming.

In the preparation subsystem 22, in order to have viewers make purchases from television programming, "enabled-content" distributed to viewers must be identified in such a way that the viewer can be notified that the interact purchase option is available. In order to accomplish this, television content providers (e.g., advertisers, merchants, vendors, etc.) have "buy-enable triggers" 401 (see Fig. 6 for format) embedded or encoded into their respective individual assets (media asset 101, e.g., a video tape, or live performance 104), as shown in Fig. 1. As a result, these television content providers maintain control of their "buy-enabled content" television programming, in contrast to current methods of advertisement programming where such control is left to the programming distributors. The actual encoding processes 102/105 are commercially available and are known in the art. Once the encoding processes 102/105 are complete, those assets 101/104, now in the form of analog/digital assets 103, which include the "buy-enable triggers" 401, are placed into normal cable distribution channels 106 for delivery to viewer televisions 109.

In particular, the media asset 101/104, (e.g., a video tape, or any item which may be broadcast or transmitted), is sent to the encode "buy-enable trigger" process 102 or 105 to have the "buy-enable trigger" (hereinafter "BET") 401 inserted into the medium 101/104.

The encode BET process 102/105 is, in effect, a duplication station which places the BET 401 at an appropriate detectable place in the asset 101/104 in such a way that further duplications of the asset 101/104 always possess the asset code; thus, the embedded BET 401 survives duplication to subsequent generations. It should be noted that there are a number of these encode BET processes 102 or 105, specifically at least one for each medium 101/104 to be encoded. The output of the

encode BET process 102 or 105 is one or more duplicate analog or digital assets 103 which contain the embedded BET 401. The duplicate analog or digital assets 103 represents the process by which programming is recorded and then duplicated for multiple replays or replay at a future time. Mechanisms to accomplish this include videotape, DVD, CD-ROM, etc. The live performance asset 104 represents programming which is delivered "live." This may include programming such as news shows, sporting events, election coverage, televised shopping, fund raising telethons, etc. The encode BET process 105 is also known as "conditionally encode buy-enabled trigger" process which provides a means for embedding BETs 401 into a live video or audio stream in such a way that they create no perceptible disruption to the viewing experience from the viewer perspective. Thus, for live programming the embedding process occurs during the transmission. Devices for this purpose are commercially available from companies such as NorPak Corporation of Ontario, Canada. The analog/digital asset 103, which contains the BET 401 may be duplicated and/or distributed via the normal distribution channels 106 to broadcast networks 30, network affiliates 32, independent broadcasters 34, cable networks and/or cable systems 36 for broadcast delivery.

Because these BETs 401 are introduced when the advertising or program content is created, specific tasks required to coordinate and enable purchase activity at tens or thousands of cable head ends is eliminated.

In the viewer interaction subsystem 24, in order to capture purchase requests from viewers, programming with the BET 401 is broadcast from the cable system head end and sent via a video distribution system 107 to a viewer digital set top box (STB) 108 and ultimately to the viewer's television 109. The video distribution system 107 is a facility containing the equipment and staff required to deliver media streams to a collection of homes and businesses. This may be a cable head end, a satellite uplink, a terrestrial data line central office, etc.

The viewer digital STB 108 is a device which allows the viewer to tune his/her television 109 (any conventional television set) while connected to a cable TV network. This device is the electronic interface between the television 109 and the video distribution system 107. The STB 108 is constructed with 1) an RF (radio frequency) tuner to support television channel changes, 2) a microprocessor which can execute

programmed instructions, 3) an operating system providing intelligence and control for internal activities, management of video and other signals received over the video distribution system (107), support for third party application programs, and 4) memory providing temporary workspace for interim calculations, etc. The STBs 108 are commercially available from companies such as Motorola and Scientific Atlanta of Norcross, Ga.

It should be understood that the term "set top box (STB)" as used throughout this Specification is used in its broadest sense and includes any device, or devices, that tune and decode video signals and other associated logic regardless of whether these functions are located in a separate housing (e.g., that is positioned on top of a television set) or is integrated with a television set.

A viewer STB 108 can be viewed as being comprised of three components in order to deliver its basic function. Those three components include the hardware, the operating system, and the "resident" application. The hardware is generally a special purpose computer designed to support communications across the cable network and to provide an environment for varying degrees of limited internal processing. Usually, individual hardware components can be interrogated as to their state, and the contents of their registers or storage buffers. This is often accomplished via software programs written in languages which support this level of access. The operating system (such as Windows CE by Microsoft of Redmond, WA. or PowerTV of PowerTV, Inc. of Cupertino, CA.) manages processes which run on that hardware, including resource scheduling and providing simplified interfaces for tasking / querying hardware components. The operating system may also support Application Program Interfaces (APIs) and facilities for third parties to run other software programs on the STB 108. Each operating system supplies its own individual set of APIs which define which events are visible from within that operating system. Examples of events which an operating system might make visible include channel change events, STB on/off events, mute events, etc.

The resident application runs in the environment created by the hardware and the operating system. It is the software program which provides the "functions" which the viewer uses such as channel changes, mute, program guide, etc. A given resident application may or may not provide APIs to third party programs which would allow

visibility to events taking place within the resident application. Resident applications which do provide APIs to third party programs, allowing visibility to events taking place in the operating system, differ from implementation to implementation. As each resident application supplies its own individual set of APIs, those events which are visible from within each resident application varies based on the resident application design. Examples of events which a resident application might make visible include channel change events, STB on/off events, mute events, etc. Due to the availability and extent of APIs, third party programs requiring access to event data may have to query the resident application APIs, operating system APIs, hardware components, or some combination of all three in order to completely fulfill its data requirements. Depending on the design of the operating system/ resident application, the manner in which the third party application utilizes the API is different. In "event" driven environments, the third party application makes an API call for a specific event or class of events and waits. The operating system passes the event data to the resident program when and if that event occurs. In "procedural" environments, the third party application executes a "loop" of instructions, repeatedly requesting data concerning an event or class of events. The API returns either the event data (if that event has just happened) or it returns a "nothing to report" response if no event has occurred. In the STB 108 of the present invention, a third party application (which is loadable across the cable system network) is stored in the STB 108 memory. The third party application defines which events it is interested in via software coding/API calls in the software language supported by the particular STB 108.

With regard to the system 20, the third party application in the STB 108 "listens" for a BET 401 in the program content sent from the video distribution system 107. When a BET 401 is detected, the application alerts the viewer that the program content is "buy-enabled." Should the viewer want to take advantage of the "buy-enabled" offer, the viewer takes action consistent with his/her particular model of STB 108, e.g., depresses a "buy button" or other button or key on the STB 108, on the remote control unit for the STB 108, etc.

In particular, as shown in Fig. 2, the STB 108 senses the BET 401 in the program content in step 201. Each instance of the application uses the facilities provided by the specific STB 108 to "listen" to the video signal to detect the BET 401.

For example, the BET 401 can be embedded in the vertical blanking interval (lines 13-21) or in the extended VBI (lines 22-25) of the signal. For the viewer interactivity to present itself to the viewer, a convention is established as to exactly where in the signal the BET 401 is placed and how it is identified. This allows the application software of the STB 108 to interrogate a specific location in each video frame for relevant data. The third party application thus listens to the location in the video signal for the BET 401. Different STBs 108 provide this capability in different ways. Some require the use of an API from the resident application. Others require use of an API from the operating system or the hardware. Some environments provide services which the application registers for and notifies the application when trigger data is passed in the video signal. Some environments require the application to continually poll or ask if the BET 401 has arrived.

Next, in step 202, the STB 108 presents the viewer with "buy-enabled" content. Once the BET 401 is detected in the proper location in the video signal, the application indicates to the viewer that the video is "buy-enabled." Different environments support a variety of methods. For some STB technologies, this is accomplished via a visual stimuli such as an icon (not shown) displayed on the television 109 screen, an indicator light on the STB 108 or television 109, etc. Causing the indicator to be presented is done via calls to the resident application, the operating system, or the hardware APIs, depending on the specific STB 108 environment. An alternative means is by providing a distinctive audible tone that emanates from the STB 108 or television 109.

Next, in step 203, the viewer indicates an interest in the presented "buy-enabled" content. For some STB 108 models, this is accomplished by the viewer using his/her remote control 1082 (Fig. 3) by activating a designated "buy button" thereon. For example, any of the spare buttons (labeled "A", "B" or "C," or any of the other spare buttons indicated in Fig. 3) on the remote control 1082 shown in Fig. 3 can serve as the "buy button." The resident program of the STB 108 is programmed to know the code when this particular "buy button" is activated. For other STB 108 models, an audible response from the viewer, e.g., vocalizing a designated phrase that is detected by a conventional microphone/receiver mechanism (e.g., an audible tone receiver) in the STB 108 or television 109. Other alternatives for capturing a viewer's interest include, but are not limited to the activation of a special device such as a key

fob transmitter (not shown), inserting an account card (also not shown) into the STB 108, or by some other distinctive action by the viewer. It should be understood that it is within the broadest scope of the present invention to include all means for detecting the viewer's desire to purchase from the "buy-enable enabled" content. By way of example and limitation, if the viewer is interested in purchasing the "buy-enabled" item, the viewer depresses the "buy button" key on his/her remote 1082. To confirm the receipt of the viewer's desire to purchase the item, the "buy-enabled" icon may change from a solid appearance to a flashing appearance. Where additional viewer interaction is required, e.g., in purchasing music, it may be necessary to have the viewer choose between cassettes or CDs and/or how many of these he/she would like to purchase, the STB 108 would prompt the viewer as to which remote control buttons should be used. In any case, all of this is accomplished with no interruption to the programming in order to maintain the viewer's television paradigm.

Fig. 4 provides an exemplary operation of the STB 108 operation during the viewer interaction step 203. In particular, in step 2031, once the program content is presented as "buy-enabled," the STB 108 waits for a buy button response. "Waiting" for a viewer response may involve registering for an event notification or polling for a viewer response, depending on the specific model STB 108. Either of these approaches will involve using the resident application, operating system, or hardware APIs. If no response is detected, the event is "discontinued" and control returns to step 201. Discontinuing the "buy-enabled" presentation may happen because an "end" message is received via the VBI (e.g., if the content is a 30-second commercial, if no response is encountered by the 29th second, an end message is generated); or, because the asset code in the VBI message has changed value. At that point, the APIs for the resident application, the operating system, or the hardware are used to stop the "buy-enabled" presentation based on the specific STB 108 environment.

If, on the other hand, a response is received by the STB 108 from the viewer, that response code is interrogated in step 2032 as to whether the specific response is the code for that STB 108 which indicates interest. If not, the response is discarded and control is returned to the waiting step 2031. If the code is the specific response, control moves to step 2033 which checks to see if there is any product information in the VBI which indicates options. If not, the response is interpreted as a "buy

confirmation" and control moves to a viewer authentication mechanism 204, described below. If there is product information in the VBI regarding product options, in step 2034, a menu of options is displayed using standard programming practices, API available for the resident application, the operating system, and/or the hardware. A list of product options from the VBI message is displayed on the screen. These options might include choices for color, size, quantity, etc. The menu is displayed using standard programming techniques in conjunction with the resident application, the operating system, and hardware APIs, as appropriate. It should be understood that the presentation of the menu is achieved by minimizing any interruption to the programming in order to maintain the viewer's television paradigm; e.g., the menu is positioned in only a quarter of the televison screen to permit the viewer to maintain the on-going television program. Control then passes to three types of menu handling logic: navigation code step 2035, select option code step 2036 and a quit code step 2037.

In the navigation code step 2035, click codes originated by the viewer using his/her remote control 1082, represent navigation activities that result in the shifting from one product option choice to the next. In the select code option step 2036, click codes originated by the viewer using his/her remote control 1082, represent selecting one of the options, resulting in the menu being cleared from the display and control being passed to the viewer authentication mechanism step 204. Finally, in the quit code step 2037, click codes originated by the viewer using his/her remote control 1082, represent "quitting the dialogue" which results in the menu being cleared from the display and control being returned to step 201.

As mentioned earlier, once a product is selected, the STB 108 moves to step 204, a viewer authentication mechanism is implemented. This process minimizes the risk of an unauthorized viewer being able to execute a "buy" request. Different manufacturers of STB 108 technology incorporate various authentication techniques as makes sense for their product. Authentication techniques in common use include PIN codes similar to use in ATM machines, facial recognition as used by facilities security companies (e.g., Lau Technologies of Littleton, Ma.), personalized transmitters similar to those used by automobile companies for locking automobiles, fingerprint scans as used for high security access control (FingerSec of Miami, FL and Mantillas

of Plano, TX), SmartCard technology (NDS Group PLC of London, England), etc. It should be understood that although the viewer authentication mechanism provides a valuable component to the commercial viability of the system 20, the system 20 could function without it.

Once the viewer executes the "buy" command, the next step 205, format message and send step 205 is implemented. In particular, the application running on the STB 108 incorporates data from the encoding and the address of the STB 108 into an STB buy request message 402 (see Fig. 6 for format). The STB buy request message 402 is sent from the STB 108 via the video distribution system 107 to a STB buy request processor 111 (Fig. 1). As a result, another advantage of the system 20 is that there is no personal viewer information such as "name, address, credit card, and amount" being transmitted over any network in the STB buy request message 402 from the STB 108. Thus, such personal information cannot be inadvertently transmitted to an improper location.

A data distribution network 110 provides the physical network through which the video distribution system 107 and the buy request processor 111 communicate back and forth. The data distribution network 110 may include communication means such as a private data network, via phone lines, via the Internet, etc.

It should be understood that the communication means 500 (Fig. 1) may comprise conventional cable television lines (i.e., existing cable plants). In such a configuration, the cable plants form the "forward channel" for delivering the "buy-enabled" programming to viewers, as well as forming the "back channel" for conveying the STB buy request message 402 back to the video distribution system 107. Thus, in this configuration, the system 20 forms an interactive purchasing system over a cable television network. Alternatively, where a satellite system forms the forward channel for delivering the "buy-enabled" programming to viewers from the video distribution system 107, the back channel is formed by a modem connection over telephone lines to the video distribution system 107. In particular, the STB 108 conveys the STB buy request message 402 to the video distribution system 107 over the telephone lines via a modem (not shown). Thus, in this alternative configuration, the system 20 forms an interactive purchasing system over a satellite system. However, it is within the broadest scope of this invention to include a back channel

formed by wireless methodology, such as the STB 108 communicating the STB buy request message 402 in a wireless form to, e.g., a satellite or a remote land-based station.

In the processing/distribution subsystem 26 of STB buy requests messages 402, the STB buy request processor 111 (Fig. 5) takes STB buy request messages 402, matches the STB 108 to a billing name and address, converts the STB 108 ID to a non-traceable unique ID, and then distributes the buy request message 402 to fulfillment parties 113. The STB buy request processor 111 can be one or more general-purpose computers running a specialized set of software applications. Those applications are defined below.

In particular, an STB buy request receiver 301 waits for STB buy request messages 402 to arrive from the video distribution system 107 which are conveyed by way of the data distribution network 110. The STB buy request receiver 301 then passes the messages to an STB address append application 302. The STB address append application 302 uses the STB 108 ID from the STB buy request message 402 to find the corresponding data record 307 in the STB master database 306 using accepted software programming practices such as database record lookups, etc. Data from that STB master record 307 is then combined with data from the STB buy request message 402 to construct a fulfillment buy request message 403 (see Fig. 6 for format). That message 403 is then passed to an anonymous ID conversion application 303.

The anonymous ID conversion application 303 uses accepted software programming practices to take the STB 108 ID from the fulfillment buy request message 403 and applies a one-way encryption algorithm to the STB 108 ID. The encrypted value replaces the original STB 108 ID. The modified fulfillment Buy Request message 403 is passed to a fulfillment vendor organization process 304. One-way encryption algorithms are publicly available. For example, two-way encryption algorithms can be made to function as a one-way algorithm by encrypting and then discarding the "key". One example of these algorithms can be found in the Kerberos Authentication / encryption available from Massachusetts Institute of Technology at www.mit.edu/kerberos/www.

The fulfillment vendor 113 is the organization that fulfills the request. It may be

the organization that was responsible for the programming which ultimately resulted in the request. Alternatively, it may be an organization that has a business relationship with the original party to handle the fulfillment.

The inclusion of a unique ID allows sponsors and fulfillment operators to more easily process buy requests for repeat customers by eliminating the need to perform a street address match between the fulfillment buy request and the sponsor's or vendor's customer files. On the fulfillment end, by including a consistent STB 108 ID for each buy request, the system 20 allows the fulfillment vendor 113 to avoid the process of matching the purchaser's street address against all other prior purchasers to determine if this is a new customer. By avoiding this costly address match, the system 20 allows for improved efficiencies in identification of new customers, tracking of repeat customer activity, and billing for the purchase. Applying one-way encryption to this unique ID eliminates any possibility of tracing the STB 108 ID back to a particular device by matching against cable customer records.

It should be noted that, as with the viewer authentication mechanism 204, although the anonymous ID conversion application 303 provides a valuable component to the commercial viability of the system 20, the system 20 could function without it.

The fulfillment vendor organization application 304 collects fulfillment buy requests messages 403 by the fulfillment vendor 113 and uses the delivery schedule field in a fulfillment vendor master record 308 (see Fig. 6 for format), from a fulfillment master database 309 to determine if the message 403 should be delivered in real time or if it should be "batched" and delivered later with other similar messages. This determination is based on the type of inventory model used by the vendor. For example, where the inventory model used by a vendor comprises ordering a predetermined amount of inventory and then once this inventory becomes depleted, re-ordering more, then batched delivery of the message 403 is selected in order to ensure that the item is stocked when the message 403 is sent. On the other hand, where inventory model used by a vendor comprises a one-time inventory order placement, then the delivery of the message 403 needs to be placed in real time. Thus, messages for vendors 113 requiring real time delivery are immediately passed to the buy request dispatcher process 305. Messages for vendors 113 configured for "batch" or "store and forward" delivery are saved until the appropriate time.

The buy request dispatcher process 305 uses accepted software programming practices to take fulfillment buy request messages 403 and repackages the messages to match the specification agreed to with the fulfillment vendor 113, which forms the request distribution method 112 (Fig. 1). This process 112 is a collection of communications methods which are available for delivering the fulfillment buy requests messages 403 to the fulfillment vendor 113. For example, depending on the vendor, requests need to be in the form of facsimiles; other vendors may require a computer-to-computer communication while other vendors may require a file transfer. Thus, whatever the agreed upon specification, the buy request dispatcher process 305 repackages the request according to the particular vendor's specification. Those methods may include terrestrial mail or parcel service, facsimile, email, EDI (electronic document interchange), file transfer, dedicated phone lines, Internet, etc. As a result, the repackaged requests are sent to the fulfillment vendor 113 according to the agreed-upon specification.

A request confirmation generator process 310 notifies the viewer that his/her request has been forwarded to the fulfillment vendor 113. The notification message 311 may take the form of real time messages, e.g., to the viewer's television 109 screen (e.g., tuning to a "status" channel on his/her STB 108 to review the state of his/her requests, or via personalized television channels monitored by the viewer), to the viewer's email address/website (e.g., viewer-initiated action such as checking the status of his/her account on an Internet web server), to the viewer's cellular telephone, or to the viewer's Palm Pilot. In addition, such notification can be made by traditional means, such as via a letter/postcard to his/her street address.

It should be noted that although the process 310 provides a valuable component to the commercial viability of the system 20, the system 20 could function without it.

The billing interface 114 handles the billing which occurs once fulfillment is completed. Fulfillment vendors 113 who have direct relationships with the viewer may choose to use their own billing systems to charge for the product. Fulfillment vendors 113 who have no facility for billing the viewer directly send a shipment confirmation message 404 (see Fig. 6 for format) which contains sufficient information to identify the merchant/sponsor of the offer, the viewer who the requested the purchase, and the

amount to be billed. This message causes the billing interface 114 to apply a charge to the viewer's preferred method of payment. That preferred method of payment may be cable bill, telephone bill, credit card, debit card, etc.

It should be understood that via the preparation subsystem 22, a plurality of television content providers can have their respective "buy-enabled content" programming provided to viewers. In addition, each of these respective "buy-enabled content" programming can be provided to viewers on a plurality of television channels. Thus, for example, the producers of a history program can provide a "buy-enabled" advertisement for the sale of a history video that can be shown on the "History" channel and/or on other television channels simultaneously, if desired. Furthermore, since the "buy-enabled content" is provided by the television providers, a plurality of television providers can be supported using the system 20.

It should also be understood that because the "buy-enabled content" is controlled by the television content providers themselves, a single entity such as the Assignee of the present invention 20, namely QVC, Inc., can manage the system 20.

From the cable system operator's perspective, implementation of the system 20 eliminates the need for coordination of activities around schedules for buy-enabled programming. Training, monitoring, and maintenance for additional equipment in the head end facility are also eliminated because no new equipment is required in the facility.

Furthermore, from the viewer's perspective, by utilizing the cable network to send purchase requests, as is done in the system 20, the need and complexity of phone lines, wireless connections, etc. is eliminated. By making the STB 108 ID both consistent and anonymous, the privacy of that viewer is protected by scrambling the data which would be used to match against any other cable television data or activity. The system 20 thus eliminates the risk that an advertiser or merchant may be able to use a piece of data received in support of a buy request to trace back to that viewer's other activity with their cable operator.

Without further elaboration, the foregoing will so fully illustrate our invention that others may, by applying current or future knowledge, readily adopt the same for use under various conditions of service.

CLAIMS

1. A system for providing interactive television purchasing for at least one viewer, said system comprising:

a first subsystem that prepares television programming to be buy-enabled and which then transmits said buy-enabled television programming over cable distribution channels;

a second subsystem for receiving said buy-enabled television programming from the cable distribution channels and presenting it to the at least one viewer, said second subsystem automatically generating a purchase request, initiated by the at least one viewer, of at least one item contained in said presented buy-enabled television programming; and

a third subsystem for receiving said purchase request from said second subsystem and automatically routing said purchase request to an item fulfillment organization for delivering the at least one item to the at least one viewer.

2. The system of Claim 1 wherein said first subsystem comprises encoding means said encoding means embedding buy-enabling indicia into the television programming.

3. The system of Claim 2 wherein said encoding means embeds said buy-enabling indicia into the television programming with no perceptible disruption to a viewing experience when the television programming is presented to the at least one viewer.

4. The system of Claim 3 wherein said encoding means embeds said buy-enabling indicia into the vertical blanking interval of the television programming.

5. The system of Claim 3 wherein said encoding means embeds said buy-enabling indicia into the extended vertical blanking interval of the television programming.

6. The system of Claim 3 wherein said first subsystem is adapted to provide said buy-enabled television programming over a plurality of channels.

7. The system of Claim 3 wherein the television programming comprises advertising programming from a plurality of television content providers.

8. The system of Claim 3 wherein said buy-enabled television programming comprises a programming asset that includes an embedded code which defines the at least one item which the at least one viewer can select to purchase.

9. The system of Claim 3 wherein said television programming is taped programming.

10. The system of Claim 3 wherein said television programming is live performance.

11. The system of Claim 3 wherein said second subsystem comprises a set top box and associated television set, said set top box being adapted for detecting said "buy-enabling" indicia.

12. The system of Claim 11 wherein said set top box comprises a resident software application that monitors said received television programming for said "buy-enabling" indicia.

13. The system of Claim 11 wherein said set top box comprises an operating system that monitors said received television programming for said "buy-enabling" indicia.

14. The system of Claim 11 wherein said set top box comprises means for alerting the at least one viewer that the television programming being presented is "buy-enabled."

15. The system of Claim 14 wherein said means for alerting the at least one viewer provides a visual indicator on the screen of said associated television set.

16. The system of Claim 15 comprises a resident software application that generates said visual indicator.

17. The system of Claim 15 wherein said set top box comprises an operating system that generates said visual indicator.

18. The system of Claim 14 wherein said means for alerting the at least one viewer provides an audible tone.

19. The system of Claim 14 wherein said set top box comprises means for detecting a communication from the at least one viewer in response to "buy-enabled" television programming.

20. The system of Claim 19 wherein said set top box comprises a remote control unit and a receiver for receiving wireless signals from said remote control unit, said communication comprising a wireless signal generated by the activation of a predetermined key on said remote control unit, said set top box further comprising a resident software application that monitors said wireless signals and detects said wireless signal generated by the activation of said predetermined key that is received by said receiver.

21. The system of Claim 20 wherein said set top box resident software application provides a visual indication to the at least one viewer that said wireless signal has been received.

22. The system of Claim 19 said set top box comprises an audible tone receiver for receiving audible tones generated by the at least one viewer and wherein said communication comprises a predetermined audible phrase generated by the at least one viewer corresponding to an acknowledgment of purchasing said presented "buy-enabled" content, said set top box further comprising a resident software application that monitors audible phrases received by said audible tone receiver and detects said predetermined audible phrase.

23. The system of Claim 19 wherein said means for detecting said communication comprises a resident software application and wherein said resident software application determines whether said "buy-enabled" indicia includes information about the at least one item that requires further consideration by the at least one viewer.

24. The system of Claim 23 wherein said resident software application presents a menu having options listed on said associated television set to the at least one viewer regarding said information about the at least one item.

25. The system of Claim 24 wherein said set top box comprises a remote control unit and a receiver for receiving wireless signals from said remote control unit, said resident software application monitoring said wireless signals received by said receiver when the at least one viewer responds to said menu by activating predetermined keys on said remote control unit, said resident software application associating each option listed on said menu with each of said predetermined keys.

26. The system of Claim 19 wherein said set top box further comprises means for authenticating said communication from the at least one viewer.

27. The system of Claim 19 wherein said set top box comprises means for generating said purchase request based on said communication from the at least one viewer.

28. The system of Claim 27 wherein said purchase request comprises a message that includes an identification of the at least one item, the sponsor of the at least one item sponsor, and the set top box of the at least one viewer.

29. The system of Claim 28 wherein said communication from the at least one viewer includes further data of the at least one item that has been selected by the at least one viewer and wherein said message includes said further data.

30. The system of Claim 27 wherein said second subsystem further comprises a video distribution system coupled between said cable distribution channels and said set top box for receiving said buy-enabled television programming from said cable distribution channels and for receiving said purchase requests from said set top box.

31. The system of Claim 30 wherein said second subsystem further comprises a data distribution network, coupled to said video distribution system, for routing said purchase request to said third subsystem.

32. The system of Claim 30 wherein said second subsystem includes a communication means that forms a forward channel for delivering said buy-enabled televison programming from said video distribution system to said set top box, said forward channel comprising cable plants.

33. The system of Claim 32 wherein said forward channel comprises wireless links.

34. The system of Claim 33 wherein said wireless links comprises satellite links.

35. The system of Claim 30 wherein said second subsystem includes a communication means that forms a back channel for delivering said purchase request to said video distribution system, said back channel comprising cable plants.

36. The system of Claim 35 wherein said back channel comprises telephone lines.

37. The system of Claim 35 wherein said back channel comprises wireless links.

38. The system of Claim 37 wherein said wireless links comprises satellite links.

39. The system of Claim 31 wherein said third subsystem comprises a processor for processing said purchase request, said processor matching a name and address corresponding to said set top box that generated said purchase request and forwarding said purchase request to said item fulfillment organization.

40. The system of Claim 39 wherein said processor comprises a set top box database for matching said name and address to identification data of said set top box that generated said purchase request, said processor generating a fulfillment buy request message from said forwarded purchase request that includes said name and address of the at least one viewer along with the identification of the at least one item.

41. The system of Claim 40 wherein said wherein said processor generates a specialized identifier for said set top box that is different from said identification data of said set top box, said specialized identifier eliminating the need by said item fulfillment organization to perform a street address match of the at least one viewer if the at least one viewer is a repeat customer and preventing any unauthorized tracing back to said set top box, said specialized identifier being inserted into said fulfillment buy request message.

42. The system of Claim 39 wherein said third subsystem further comprises a fulfillment vendor organization application that determines whether to deliver said fulfillment buy request message to said item fulfillment organization in real time or batched in accordance with an inventory model of said item fulfillment organization.

43. The system of Claim 42 wherein said third subsystem further comprises a buy request dispatcher application that configures said fulfillment buy request message in accordance with an expected purchase request format of said item fulfillment organization.

44. The system of Claim 43 wherein said third subsystem further comprises a request confirmation generator application that notifies the at least one viewer that his/her purchase request has been forwarded to said item fulfillment organization.

45. The system of Claim 44 wherein said request confirmation generator application comprises means for transmitting a real time message to said associated television set of the at least one viewer that confirms his/her purchase request has been forwarded to said item fulfillment organization.

46. The system of Claim 45 wherein said request confirmation generator application comprises means for transmitting a real time message the at least one viewer that confirms his/her purchase request has been forwarded to said item fulfillment organization.

47. The system of Claim 46 wherein said request confirmation generator application comprises means for transmitting a real time message to said associated television set of the at least one viewer that confirms his/her purchase request has been forwarded to said item fulfillment organization.

48. A method for providing interactive television purchasing for at least one viewer, said method comprising the steps of:

(a) providing television programming that has been buy-enabled over cable distribution networks;

(b) providing a set top box to the at least one viewer that can receive television programming from the cable distribution networks and which can detect said buy-enabled television programming;

(c) presenting said buy-enabled television programming to at least one viewer on a television set associated with said set top box;

(d) said set top box automatically generating an at least one item purchase request, initiated by the at least one viewer, that is transmitted over a data distribution network to a fulfillment organization; and

(e) delivering the at least one item to the at least one viewer in response to said at least one item purchase request.

49. The method of Claim 48 wherein said step of providing television programming that has been buy-enabled is prepared by television content providers.

50. The method of Claim 48 wherein said step of presenting said buy-enabled television programming comprises no perceptible disruption to the viewing experience of the at least one viewer.

51. The method of Claim 50 wherein said step of providing television programming that has been buy-enabled comprises embedding buy-enabling indicia into the vertical blanking interval of the television programming.

52. The method of Claim 50 wherein said step of providing television programming that has been buy-enabled comprises embedding buy-enabling indicia into the extended vertical blanking interval of the television programming.

53. The method of Claim 48 wherein said step of providing television programming that has been buy-enabled over cable distribution networks comprises providing said buy-enabled television programming over a plurality of channels.

54. The method of Claim 48 wherein said step of said set top box automatically generating an at least one item purchase request comprises prompting the at least one viewer to indicate his/her interest in purchasing the at least one item by activating a predesignated key on a remote control unit associated with said set top box.

55. The method of Claim 54 wherein said step of said set top box automatically generating an at least one item purchase request further comprises providing an indication to the at least one viewer that said predesignated key activation has been detected.

56. The method of Claim 55 wherein said step of detecting said predesignated key activation is authenticated to have originated only from said at least one viewer.

57. The method of Claim 48 wherein said step of said set top box automatically generating an at least one item purchase request comprises prompting the at least one viewer to indicate his/her interest in purchasing the at least one item by vocalizing a predetermined statement.

58. The method of Claim 57 wherein said step of said set top box automatically generating an at least one item purchase request further comprises providing an indication to the at least one viewer that said vocalized predetermined statement has been detected.

59. The method of Claim 57 wherein said step of detecting said vocalized predetermined statement is authenticated to have originated only from said at least one viewer.

60. The method of Claim 48 said step of said set top box automatically generating an at least one item purchase request further comprises providing the at least one viewer with a menu regarding further data about the at least one item and detecting responses from the at least one viewer regarding said further data.

61. The method of Claim 48 wherein said at least one item purchase request comprises a message that includes an identification of the at least one item, the sponsor of the at least one item and said set top box of the at least one viewer.

62. The method of Claim 61 wherein said step of transmitting said at least one item purchase request over a data distribution network comprises matching a name and address of the at least one viewer to the set top box of the at least one viewer that generated said purchase request.

63. The method of Claim 60 wherein said step of transmitting said at least one item purchase request over a data distribution network to a fulfillment organization comprises generating specialized identification data for said set top box that facilitates processing of said purchase request by said fulfillment organization whenever the at least one viewer is a repeat customer while preventing tracing back to said set top box.

64. The method of Claim 60 wherein said at least one item purchase request that is transmitted over a data distribution network comprises a fulfillment buy request message that includes said specialized identification data.

65. The method of Claim 64 wherein said fulfillment buy request message is delivered to said item fulfillment organization in real time.

66. The method of Claim 64 wherein said fulfillment buy request message is delivered to said item fulfillment organization in batch.

67. The method of Claim 64 wherein said fulfillment buy request message is configured to an expected purchase request format of said item fulfillment organization.

68. The method of Claim 65 further comprising the step of informing the at least one viewer that said purchase request has been forwarded to said item fulfillment organization.

69. The method of Claim 68 wherein said step of informing the at least one viewer comprises transmitting a real time message to the at least one viewer that said purchase request has been forwarded to said item fulfillment organization.

70. The method of Claim 69 wherein said step of transmitting a real time message to the at least one viewer comprises transmitting a real time message to said associated television set that said purchase request has been forwarded to said item fulfillment organization.

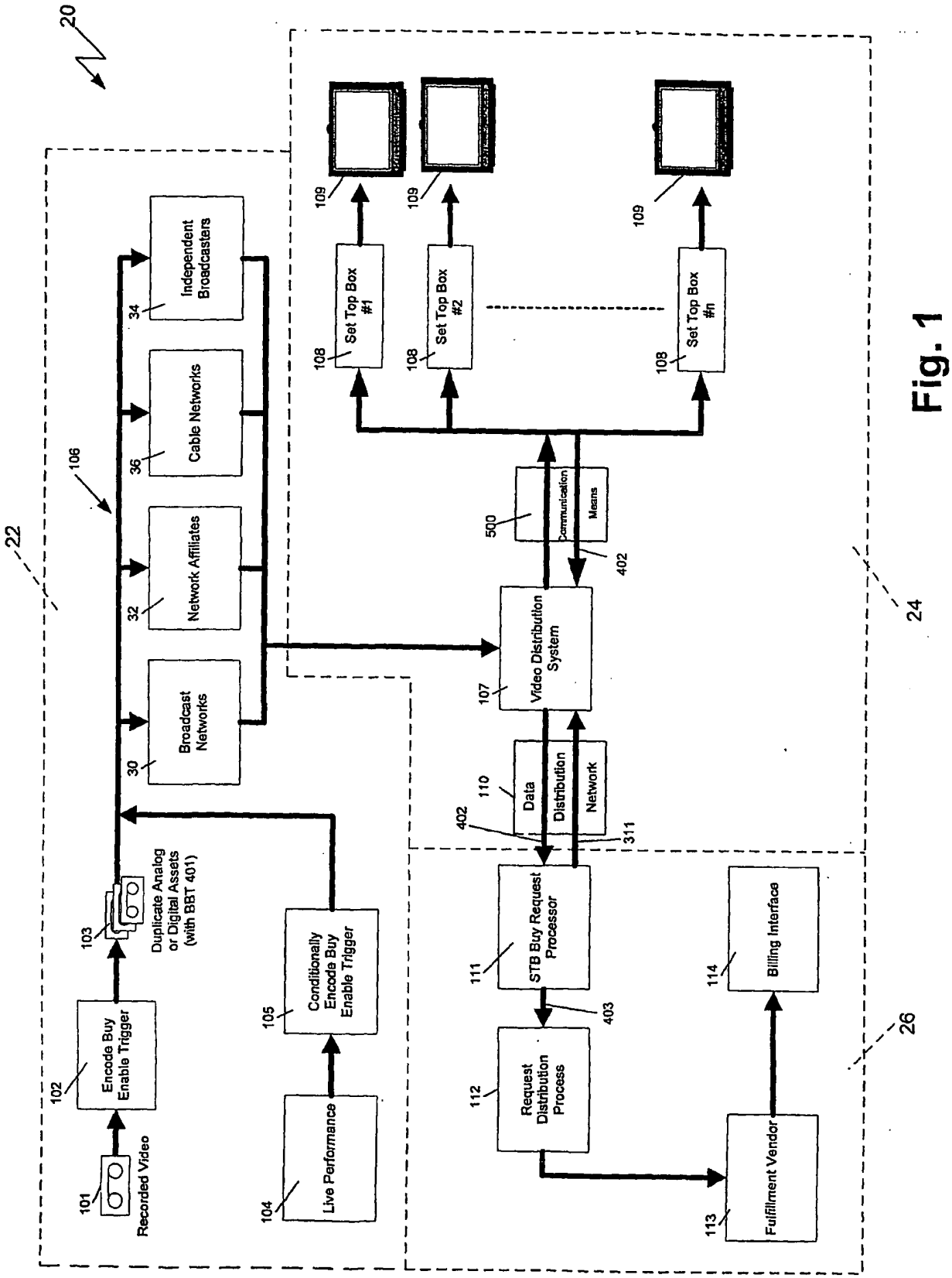
20
22
24
26
106
Independent Broadcasters
34
Cable Networks
36
Network Affiliates
32
Broadcast Networks
30
Duplicate Analog or Digital Assets (with BBT 401)
103
Encode Buy Enable Trigger
102
Recorded Video
101
Conditionally Encode Buy Enable Trigger
105
Live Performance
104
109
Set Top Box #1
108
Set Top Box #2
Set Top Box #n
Communication Means
500
402
Video Distribution System
107
Data Distribution Network
110
311
STB Buy Request Processor
111
403
Request Distribution Process
112
Billing Interface
114
Fulfillment Vendor
113

Fig. 1

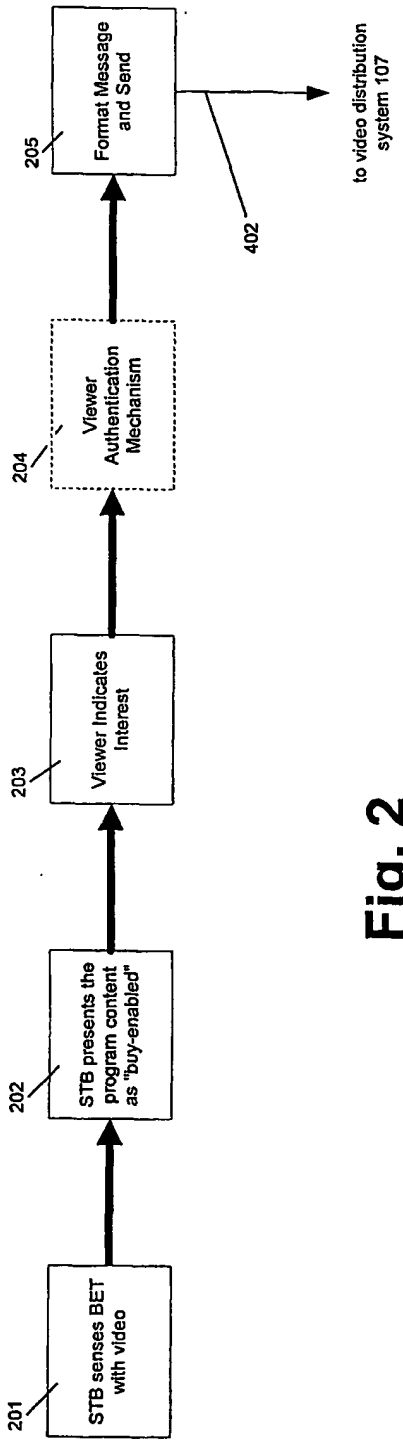
201
STB senses BET with video
202
STB presents the program content as "buy-enabled"
203
Viewer Indicates Interest
204
Viewer Authentication Mechanism
205
Format Message and Send
402
to video distribution system 107

Fig. 2

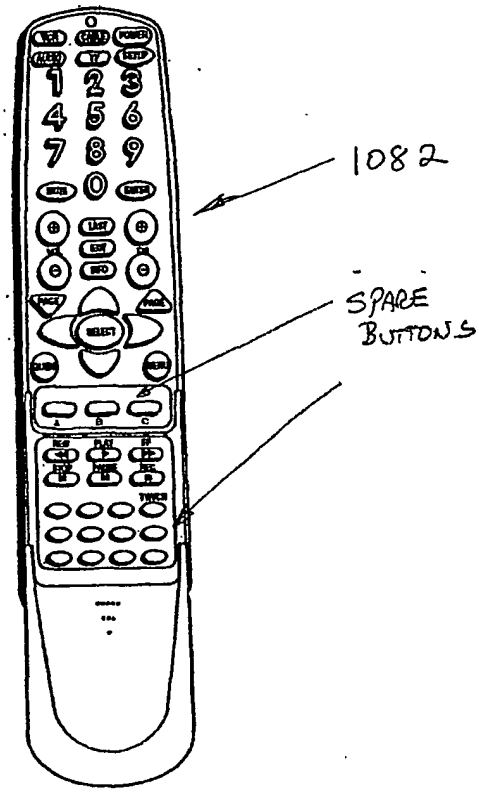

FIG. 3

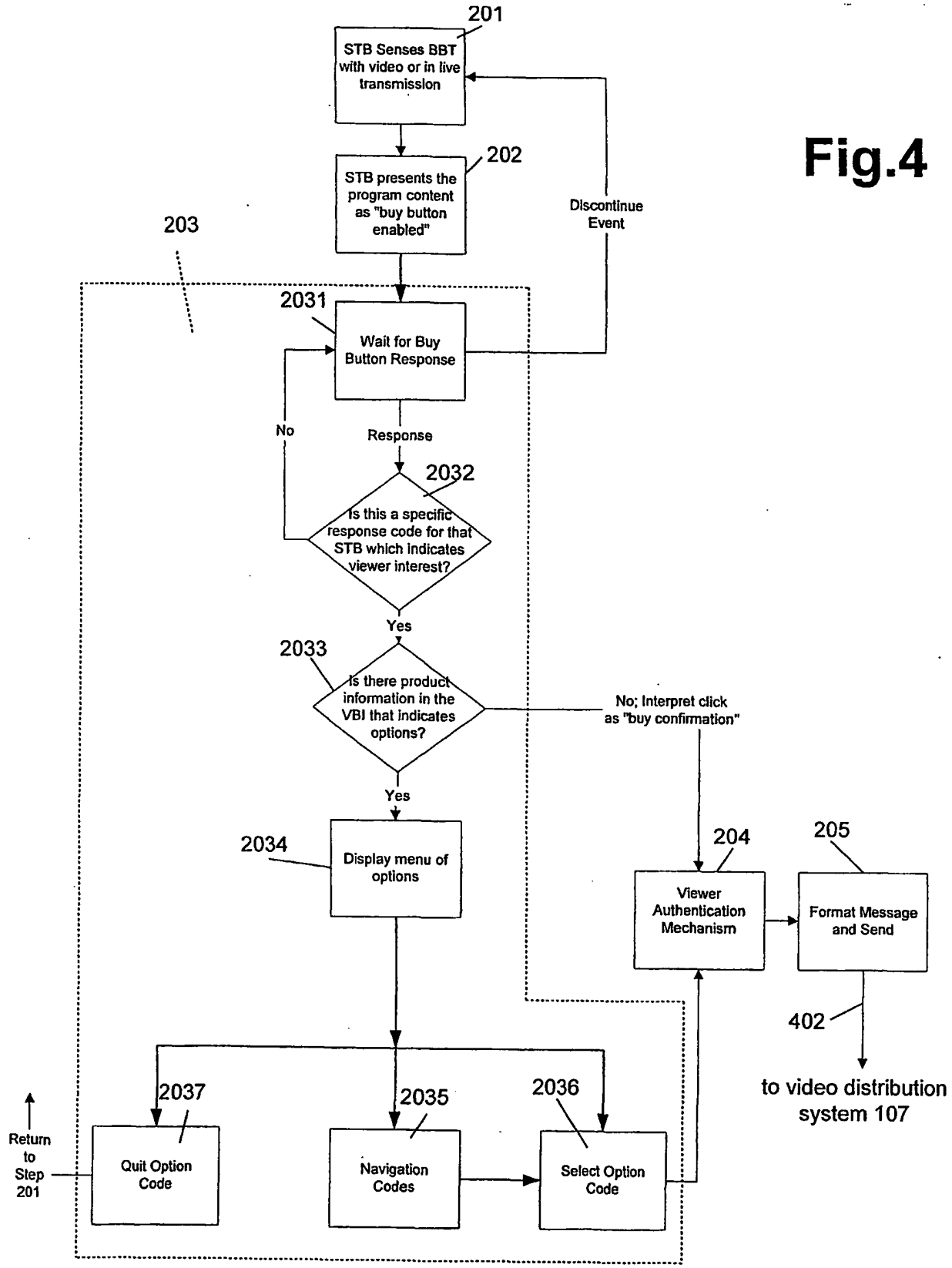
201
STB Senses BBT with video or in live transmission
202
STB presents the program content as "buy button enabled"
Discontinue Event
203
2031
Wait for Buy Button Response
No
Response
2032
Is this a specific response code for that STB which indicates viewer interest?
Yes
2033
Is there product information in the VBI that indicates options?
No; Interpret click as "buy confirmation"
Yes
2034
Display menu of options
204
Viewer Authentication Mechanism
205
Format Message and Send
402
to video distribution system 107
2037
2035
2036
Return to Step 201
Quit Option Code
Navigation Codes
Select Option Code

Fig.4

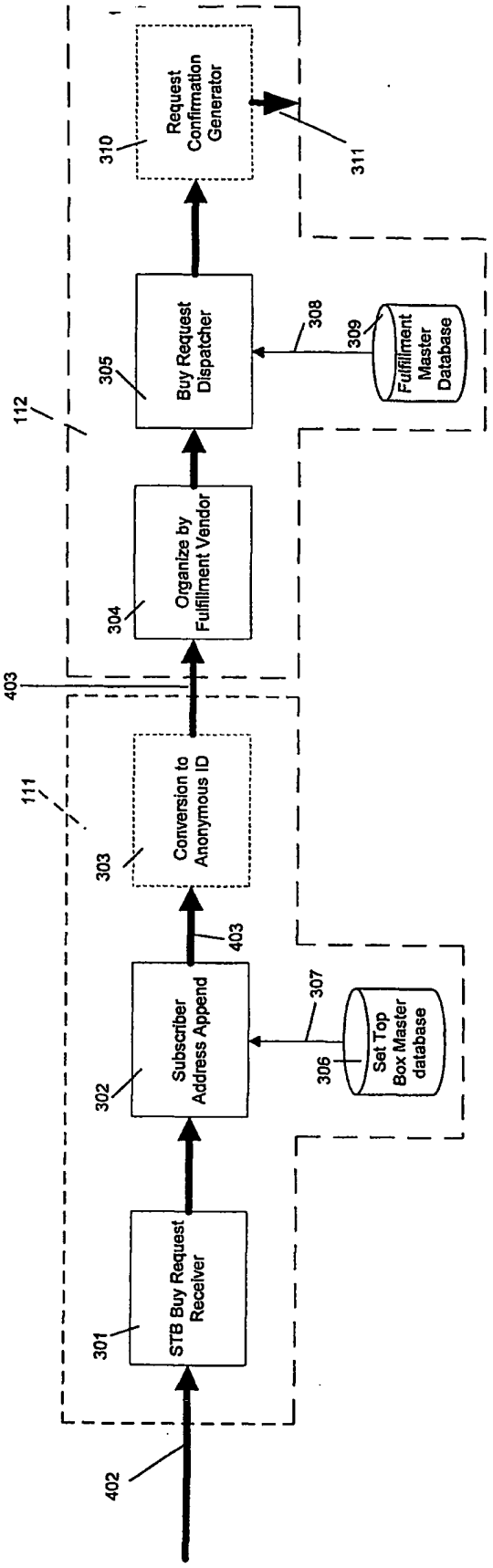
STB Buy Request Receiver
301
Subscriber Address Append
302
Set Top Box Master database
306
307
Conversion to Anonymous ID
303
Organize by Fulfillment Vendor
304
Buy Request Dispatcher
305
Fulfillment Master Database
309
308
Request Confirmation Generator
310
311
402
403
111
112

Fig. 5

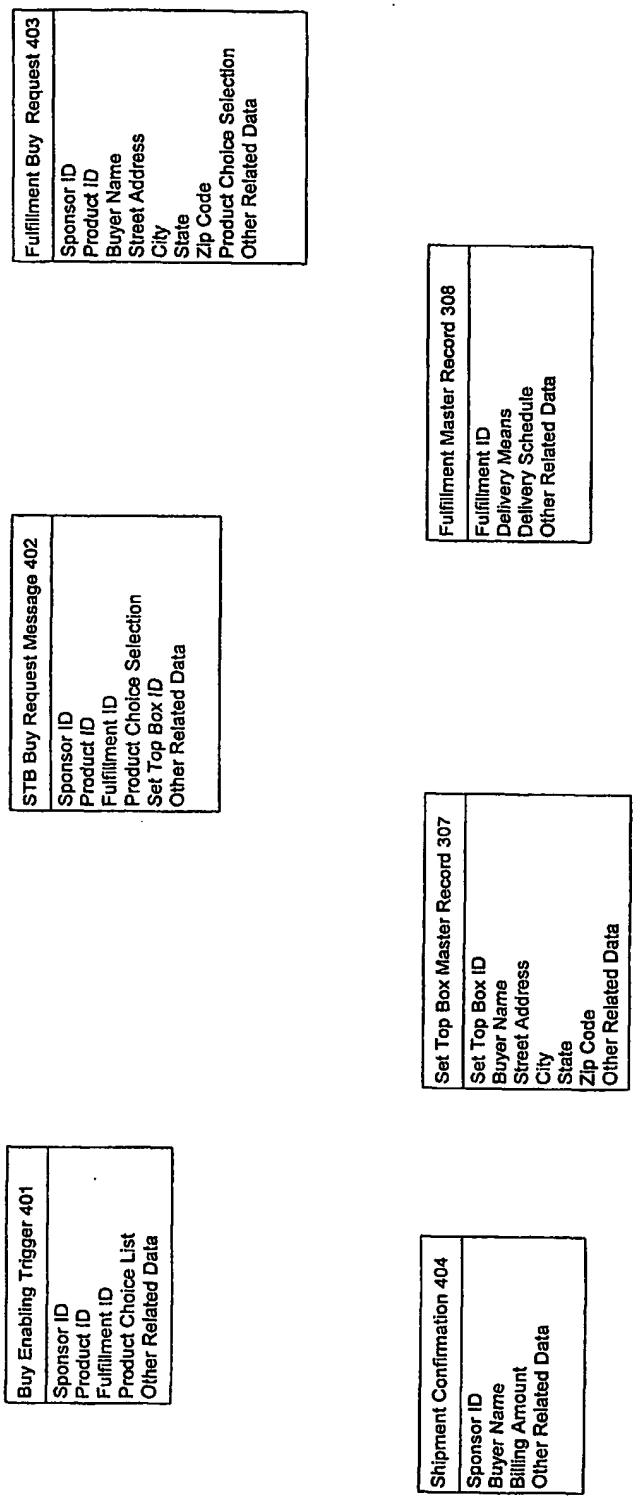
Fulfillment Buy Request 403
Sponsor ID
Product ID
Buyer Name
Street Address
City
State
Zip Code
Product Choice Selection
Other Related Data
STB Buy Request Message 402
Sponsor ID
Product ID
Fulfillment ID
Product Choice Selection
Set Top Box ID
Other Related Data
Fulfillment Master Record 308
Fulfillment ID
Delivery Means
Delivery Schedule
Other Related Data
Buy Enabling Trigger 401
Sponsor ID
Product ID
Fulfillment ID
Product Choice List
Other Related Data
Set Top Box Master Record 307
Set Top Box ID
Buyer Name
Street Address
City
State
Zip Code
Other Related Data
Shipment Confirmation 404
Sponsor ID
Buyer Name
Billing Amount
Other Related Data

Fig. 6